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Fundamentals of Screening for Mild Cognitive Impairment and/or Dementia

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It is well accepted that life expectancy is on the rise and with people living longer, declines in physical, psychosocial and cognitive wellbeing are the norm. Optimizing function, maintaining brain health, promoting auditory wellness and social integration are integral to healthy aging and quality of life. Audiologists have an important role to play as independent professionals and as members of interprofessional teams working to help people “age well,” in the presence of changes in capacity across multiple domains of function. With a focus on person centered care, the conversation surrounding aging has been reframed. Presently the biopsychosocial model prevails informed by primary, secondary and tertiary screening to promote healthy and successful aging (Friedman, Mulhausen, Cleveland, M., et al., 2018)

Integral to successful aging is avoiding disease related disability, preserving physical and cognitive capacity (Rowe & Kahn, 1998). To optimize cognitive health, early detection of sensory impairment is a form of secondary prevention and social prescribing, including environmental modifications, a form of tertiary prevention. (Friedman, Mulhausen, Cleveland, et al, 2018). Falls prevention programs, use of rehabilitative technologies and, environmental modifications are forms of secondary and tertiary prevention respectively to optimize physical health (Friedman and colleagues, 2018). Forming meaningful relationships, a form of social prescribing, is integral to primary prevention if social integration/engagement is to be maintained once hearing status is optimized. Finally, identifying modifiable risk factors and intervening early could in theory delay the onset of and perhaps reduce the economic costs of dementia (Livingston, et al., 2017, 2020).

Given the high prevalence of hearing loss among persons with mild cognitive impairment (MCI), the disproportionate weight attributed to hearing loss as the largest modifiable risk factor for dementia onset, and the sensory bias inherent in cognitive tests relying on audition to assess cognitive function, hearing health professionals can expect to see an increasing number of persons presenting with normal age-related decline in cognitive capacity, MCI (Mild Neuro-Cognitive Disorder) and diagnosed or undiagnosed dementia (Major Neuro-Cognitive Disorder). Recently, there has been considerable controversy and debate over the scope of practice of audiologists as relates to cognitive decline and our potential role along each step of the dementia trajectory. Some of the issues being debated include: a. whether it is within the scope of practice to screen selected patients to identify persons at risk for dementia, b. whether hearing status should be tested by audiologists prior to a cognitive evaluation, and, 3. whether intervening with some form of hearing technology can slow down the progression or prevent the onset of dementia (Powell, Oh, Lin, et al., 2021). Informed by the recommendations of the U.S. Preventive Task Force (2020) against screening for cognitive impairment which are listed in Table 1, I will provide a brief discussion of dementia, considerations in screening cognitive status, and will conclude with a brief overview of

the variety of approaches available to audiologists for identifying patients who are either at risk for cognitive decline/dementia or present with dementia be it diagnosed or undiagnosed (Owens, Davidson, Krist, 2020).

Table 1. U.S. Preventive. Services Task Force Position on Cognitive Screening (Owens, Davidson, Krist, et. al., 2020)

- Evidence on screening for cognitive impairment is lacking and the balance of benefits and harms cannot be determined
- The direct evidence of the benefits of screening for cognitive impairment is inadequate
- There is inadequate evidence of the harms of nonpharmacologic interventions targeting the person with dementia

Dementia Defined

An umbrella term for a syndrome that includes a wide range of brain changes that can eventuate in one or more of behaviors which **interfere with** a person's ability to perform daily activities independently, dementia is multi-factorial and highly prevalent. Table 2 provides an overview of behaviors associated with cognitive decline which are distinct from normal age-related changes. The cognitive capacity trajectory ranges from cognitive changes associated with normal aging to mild cognitive impairment to cognitive behaviors present in persons with full-on dementia. The distinction between mild cognitive impairment (MCI) and dementia is an important one. In the case of the former, despite poor cognitive performance in one or more of the domains listed in Table 2, the individual is able to independently perform everyday functional activities with minimal or no assistance. A dementia diagnosis is typically made when the cognitive changes progress to the point that the individual is no longer able to carry out activities of daily living independently. It is noteworthy that there are different causes of dementia which vary in terms of symptomology/behaviors. Alzheimer's disease is the leading cause of dementia with vascular, frontotemporal and dementia with Lewy bodies each accounting for approximately 5-10% of cases. In light of the multifactorial nature of dementia, screening tests may be sensitive to memory loss but not powerful enough to identify persons in whom processing, communication skills, and compromised judgment are the primary presenting symptoms which is why behavioral observation is so important and screening is fraught with challenges. Given the complexities involved in screening cognitive status, I include a list of minimal competencies in Table 3 as a checklist against which to judge readiness to screen for cognitive decline and/or dementia and charge a fee for the service. It is important to underscore that in contrast to early diagnosis which is designed to detect a condition early in people presenting with symptoms, the purpose of screening is to identify people who do not yet have symptoms.

Table 2. Cognitive domains and behaviors associated with brain changes defining dementia (APA, 2013).

1. decline in thinking and problem-solving skills
2. changes in memory capacity

3. changes in judgment and executive function
4. compromised communication skills (e.g. expression and receptive) and
5. changes in personality
6. compromised visuo-spatial skills
7. reduced attention
8. social cognition challenges

Table 3. Minimal competencies to consider when deciding “to screen or not to screen’

1. An understanding that dementia is NOT a disease but is a group of symptoms
2. Familiarity with the multiple causes of dementia and the differential effects on behavior
3. Comfort level with having a conversation about brain health and its connection to auditory wellness
4. Familiarity with how to communicate effectively with persons with dementia and family members
5. Understand the connection between hearing, hearing loss and dementia and the role of hearing interventions (**no causal relationships have been established so we can not mislead our clients or set unrealistic expectations**)
6. Being person centered and understanding the unique needs of each individual patient
7. Appreciating management goals when working with people with dementia and why hearing health is relevant (e.g. engaging in activities that give meaning and purpose is a critical goal and optimizing auditory function can assist in realizing this goal
8. Understand the progression of dementia
9. Understand the needs of persons with dementia (e.g. need to be included, need to be valued)
10. Have a network of professionals to whom to refer for dementia related resources (e.g. pathways for referral)

Approaches to Screening: Informal vs. Formal

Irrespective of whether an audiologist believes cognitive screening is within our scope of practice, given the rise in life expectancy, the prevalence of hearing loss among persons with dementia, and the prevalence of dementia among persons with severe to profound hearing loss, it is incumbent on each of us to observe patients for red flags re cognitive status especially among patients who are 70 years of age and older. Our case history should be holistic, with a focus on the whole person, including gaining an understanding of their self-perceived cognitive capacity and social/emotional/physical well-being. Answers to such questions could inform our testing protocols, approaches to counseling and management and depending on the responses, could lead

to referral to primary care. To this end, the case history might include questions about falls history (persons dementia are at significant risk for falls) and signs of changes in cognition (e.g. memory changes, forgetting where things are placed, difficulty expressing thoughts and ideas, difficulty understanding speech in noise). Asking patients and their family members if in fact they have concerns about memory, and/or if they have noticed changes in memory can be informative (AGS, 2020). In addition to asking directly, it is critical that we observe behaviors or changes in behaviors of patients we have seen through the years. For example, does the patient seem to be asking the same question over and over again, does the patient repeatedly mishear what you are asking, does the patient take longer than usual to process incoming information and to respond to questions being asked, does the patient have difficulty expressing him/herself when answering history questions, does the patient have difficulty following the directions after you have instructed them how to respond, or is the patient a poor historian (GSA, 2020). A tell-tale sign of cognitive decline in patients with whom you have worked over the years is whether the patient seems to be missing appointments or coming late to appointments. Since spouses or care partners are often excellent informants, there are a number of family and informant questionnaires which are of proven reliability and validity underscoring the import of input from family members. Finally, the WHO recommends some simple and informal ways of assessing cognitive function to inform management including assessing orientation to time and place by simply asking patients the date, and to tell you where they are at the time of the clinical encounter. It can also be helpful to ask patients if they have any difficulties performing daily activities and to describe the difficulties. When we recommend a hearing intervention, we must make sure counseling is informed by lifestyle considerations and any concerns our patients express regarding memory or cognition (GSA, 2020).

Formal Approaches to Screening

A number of validated and brief cognitive screening tests are available which do not require special permissions or training to administer. The Gerontological Society of America (GSA) (2020) suggests three key considerations when health when selecting a cognitive screening test. These include: a. time period for administering the screen (5-10 minutes is considered ideal) b. cost of the test and necessity of special training (free of charge and no need for special training is always preferable) c. whether the test is reliable and has been validated. Three tests used in primary care include the Mini-Cog, the Clock Drawing Test, and the Montreal Cognitive Assessment test (MOCA). The latter tests are dependent in part upon adequate audition so use of a personal amplifier or screening hearing status before administration could prove beneficial. Partially in response to concerns that hearing loss could potentially skew performance on the more traditional screening tests, Cognivue Thrive developed a self- administered cognitive screening option. The technology includes a “laptop like device” with individuals independently completing the assessment with instructions provided auditorily and via closed captioning. Hence, vision and motoric skills should be adequate before the test is administered. It is beyond the scope of the paper to discuss each of the screening tests and it is important to underscore that prior to incorporating a formal cognitive screen into your practice, experience administering and interpreting under the tutelage of an experienced clinician is imperative. Similarly, referral pathways must be in place, and a comfort level with kickstarting a conversation about cognitive status and discussing abnormal findings is an imperative.

Summarizing Remarks

The World Health Organization (WHO, 2017) advocates an integrated, person-centered approach to working with older adults if healthy aging is to become a reality. The WHO (2017) suggests that health professionals can support healthy aging by gaining familiarity with and addressing selected chronic conditions which interfere with selected domains of functions such as mobility, visual status, hearing capacity, and cognitive capacity. Specifically, every attempt should be made to remove barriers to effective functioning in one's social context such as correcting for hearing loss. Similarly, health professionals must know how to recognize when a person presenting with hearing loss may display behaviors such as forgetfulness and communicative challenges (e.g. difficulty finding or choosing the correct word) which may signify the presence of cognitive decline which will inform care pathways. Audiologists have an important role to play in identifying people with communication difficulties which may arise from hearing loss and/or cognitive decline not associated with normal aging who could benefit from the array of hearing related intervention options available. Given the rise in life expectancy, the associated increase in prevalence of hearing loss and cognitive decline/dementia, audiologists must broaden their knowledge base to be able to work effectively with persons with dementia (PwD) and sensory loss. To that end we must be able to recognize behaviors associated with dementia, a 21st century health challenge, to effectively communicate with these individuals (Table 4) and to maximize auditory capacity to help maintain or improve life quality. We have an outsized opportunity to have a positive effect on both hearing health and the cognitive health of our patients.

Table 4. Communication tips when working with persons with dementia

1. Optimize audibility
2. Get the person's attention before speaking
3. Allow adequate time for the person to process the message and to respond
4. Remove visual and auditory distractions
5. Make sure a person who has DSI uses visual aids/glasses
6. Speak slowly and face the listener
7. Provide a context for the conversation

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